Exerciser

There are many types of exerciser available today and these can be divided into two categories. The first category is a large machine which is found in fitness rooms and health establishments. The second type is aimed at the home user and are generally portable from room to room.

Examples of the first type are bench presses, multi-gyms and leg exercisers that focus on pulling or lifting weights. These larger machines can be used for a complete workout, however one would generally need to utilise a number of them to exercise most of the body. This act of having to visit several machines in the course of fully exercising is a well practised one and is commonly referred to as doing a circuit. These machines are expensive and require substantial investment not just in the cost of maintaining and operating them, but also in the time spent in setting the machine up for each use, and finding a suitable permanent space large enough for them. Many multi-gyms require installation by bolting onto the floor before they can be safely used. Users of these machines may also need to have a supervisor present while they exercise on them in case they get into difficulties, as some exercise machines can cause damage to the user as well as the machines themselves if they are operated incorrectly. As a result most of the larger machines are impractical for the average person and are confined to health clubs or gymnasiums, and using these exercise machines has become an activity that is done only when scheduled and is usually confined to a separate room.

The second type of exercisers are generally portable from room to room in the home but are primarily designed to be targeted at a specific muscle group or body part, and so only have a very limited range of exercises. Examples of these are spring loaded hand exercisers, dumbbells and the number of specialist machines aimed at toning the stomach area. These smaller machines do not permit a wide range of exercises outside their specially designed ones and as a consequence are not able to exercise different body parts. Another drawback is that the smaller types of exerciser generally compromise robustness for affordability and portability. In other words in order to keep the cost, size and weight down there is frequently a feeling of cheapness to the exerciser which detracts from the experience of using it and does not engender more frequent use. A further drawback to these smaller exercisers is that due to their small size they frequently do not provide the user with the ability to exercise a full repetition where the user extends their limb or muscle group to its full length, or contracts from its full extension. While these smaller exercisers are more practical and affordable for the average person, they do not provide a thorough work out all over the body and are usually used in addition to other exercisers.

Having an exerciser that can be used whenever there is a break or a pause in-between activities, such as during a lunch break or while waiting for an appointment, would be useful for those who have a busy lifestyle or do not want to spend the effort in visiting a health establishment. Long periods of inactivity such as during a long-haul flight or when caught in a traffic jam would also provide an ideal opportunity to use an exerciser. An additional benefit of using

an exerciser in such a scenario is that the exercising helps to pass the time while keeping the user alert in an otherwise monotonous situation.

An exerciser in accordance with the present invention comprises an elongate body containing a resistive mechanism, a first handling member arranged generally along the major axis of the elongate body and slidably received within the body, the resistive mechanism providing a force against the insertion of the first handling member into the elongate body and a second handling member attached to the elongate body.

The present invention seeks to provide an exerciser which is light in weight and easily stored about a person and is yet capable of a wide range of exercises. It is preferable that the exerciser is easily assembled from a small number of parts, and when assembled the exerciser exhibits a degree of robustness and the quality feel that is found in larger machines. In use, the two handling members may be held between two parts of the human body, and a compressive force applied between the handling members to exercise the body. The design allows the exerciser to be used by different parts of the body to give a full range of exercises.

Such an exerciser combines portability, extreme light weight and compactness to be able to be carried about the person during the day. To be of maximum use it is versatile and is able to be used in a variety of different exercises. For the situations envisaged it is also able to be set up and stored away quickly, and is

robust enough to be transported and handled roughly. For this purpose, it is preferred that the handling members are removably attached to the main elongate body.

It is a preferred feature of the invention that the first handling member includes an elongate or a rod-like element received in the elongate body of the exerciser. In this case, the rod-like element is preferably removably attached to the rest of the handling member for storage.

It is another preferred feature of the invention that a rod-like element, similar to that of the first handling member is provided to be fitted between the second handling member and the elongate body, and also aligned generally along the major axis of the elongate body. The provision of the elongate element between the body and handling member increases the overall length of the exerciser such that a full length repetition motion can be achieved by exercising with the second element. It is preferred that the second handling member can be attached to the body directly or with the elongate element. Accordingly additional exercises can be undertaken to take advantage of this. This is advantageous as some muscles can only be effectively exercised by half-repetitions closer to the body.

Preferably the two handling members are freely rotatable with respect to each other generally about the axis of the exerciser so that additional exercises, which are only achievable with the handles orientated in different directions, may be carried out.

In use the rod-like elements are securely attached to the handling members. The rod-like element attached to the second handling member is also securely attached to the elongate body. It is conceivable that owing to the small diameter and smooth surface of some types of rod-like elements, they would be difficult to grip and apply sufficient force to dis-assemble from the handling members or the elongated body. In a preferred feature, the rod-like elements possess a hole through which a bar may be inserted. The bar is used to assist dis-assembly by allowing more torque to be applied and provides better grip. Alternatively the preferred feature may be a recess in the rod-like element, adapted to receive a post which would then assist in the same manner as the bar. Further preferred features to assist in dis-assembly include the rod-like element, or at least a portion of the rod-like element, being of a polygonal section. The vertices of the polygonal section providing increased grip and torque to the user. Another preferred feature is to provide a rod-like element, or at least a portion of the rod-like element, with a rough surface composed of ridges or bumps, such that a very high grip area is created to assist the user in removing the rod-like element.

Where the second handling member is connected to the body by an elongate element, it is preferred that a flange is provided arranged to be fitted between the elongate body and the rod-like element at the point where the rod-like element meets the elongate body. The flange is shaped to provide support for at least two fingers, for example including grooves for a user's fingers, and provides the user with the option of carrying out a reduced length repetition

without having to remove the rod-like element and replacing the second handling member onto the elongate body. The flange is preferably removably attached to the body for storage.

Having removable components enables the exerciser to be broken down into a convenient size for storage. The removable attachment of the components may be achieved, for example, using a screw thread or a press stud. In another preferred feature it is envisaged that the handling members can be attached to either the first or the second rod-like element, or to the elongate body itself by the same type of attachment means. When there is more than one removable component employed in the exerciser it is preferred that the attachment means is the same for all the removable components.

In a preferred feature the first handling member is removably secured within the elongate body by means of a spring loaded ball, partially protruding from the surface of the first rod-like element, which is pushed through the corresponding aperture in the elongate body and restrains the first rod-like element from separating from the elongate body by engaging against the aperture. To remove the first rod-like element from the elongate body all that is required is a firm pull so that the partially protruding ball is pushed back into the first element by the aperture wall.

The resistive mechanism can comprise a spring. This is an inexpensive method of providing a resistive force and is reliable. Alternatively elastomeric foam could

be used to provide the resistive force required and is also inexpensive.

A means to pre-load the compressive components so that the resistive force felt by the user when exercising can be varied may be provided. This could have the form of a dial at one end of the elongate body which when rotated pushes a plunger onto the resistive component to compress it.

Other constructions for the resistive mechanism include using a pneumatic or a hydraulic cylinder. This has the advantage of offering the user resistive force in both directions of exercising. In other words the exerciser will offer the user a further set of exercises by providing resistance in both compressing the exerciser as well as extending it. Further preferred features for an exerciser with a pneumatic or hydraulic cylinder include having adjustable valving means for varying the degree of resistance. Possible means for varying the flow rate of fluid through the valving means include a dial at one end of the elongate body which when rotated partially occludes the valve through which fluid leaves the main cylinder, although alternative constructions can also be envisaged.

Where a means is provided for varying the resistance, it is preferred that an indicator is provided to indicate the level of resistance. The means for adjusting the level of resistance preferably include features to assist its actuation, such that, even with sweaty hands, this can be accomplished easily. This can be in the form of ridges which stand proud of the adjuster, or the adjuster itself can be shaped in a polygonal section so that when turning the adjuster there are

vertices to torque against.

It is preferable that frictional forces between the plunger or the resistive mechanism, especially where this is a spring, and the inner surface of the tube be minimised to prevent wear on the machine and to provide a smooth action for the user. This could be accomplished by lining the stationary surface with a low coefficient of friction material such as polytetrafluoroethylene (PTFE), or any other material with a similar characteristic. The lining may advantageously be in the form of a sheet of low friction material which is rolled up and provided in the main housing, or could be a low friction tube inserted in the housing or a coating applied to the inside of the housing. Alternatively, the areas of the plunger or resistive mechanism which are in contact with the stationary surface could instead be coated with PTFE or a similar material. It is envisaged that the plunger itself may be made from a plastic such as high density nylon, or any other plastic with suitable characteristics for strength and low friction. A further preferable feature for reducing friction between moving components in the exerciser would be to apply a coating of grease of a suitable viscosity to the surfaces in contact. While the abovementioned preferred features for reducing friction are referred to separately, it is envisaged that any combination of them can be employed together.

It is a further still preferred feature that there is provided means for counting the number of repetitions achieved by the user. This can be a simple mechanical counter which can be reset by the user and activated by sliding the first handling

member into the elongate body past a certain point, or it could be an electronic unit which in addition to functioning as a counter could operate as a timer, or monitor other parameters such as heart rate, and can be set to warn the user when a specific setting is achieved.

The elongate body is preferably made of metal as is preferably the first and second elements, as the chosen material has to be able to resist the stresses involved in the operation of the exerciser while lending a substantial feel to it. An appropriate metal would be stainless steel as it provides a quality look, is relatively inexpensive and is easily cleaned although other materials may be used according to cost or weight considerations. For example plastics may be chosen for exercisers in accordance with the present invention that are intended to be given to passengers on long-haul flights due to their low weight or as complimentary gifts due to their low cost. Light weight plastics may be used for children's versions where the stresses involved in using the exerciser will be lower.

The handling members are preferably metal, and further preferably coated with a rubberised high friction layer to provide a comfortable feel and to provide good grip even with sweaty hands or body. Alternatively with some of the exercises available with an exerciser according to this invention, the handling members may be rested at an acute angle against another surface separate from the user without the exerciser slipping due to the friction coating. By allowing the handling members to be rotate freely about the major axis of the elongate body additional

exercises are possible where the handling members may be oriented in the most stable direction according to the surface it is in contact with. With some exercise postures, it requires only the slightest difference for a different muscle group to be worked on instead. Some of the exercises only possible with an exerciser according to this invention are given below by way of example only:

1. The user in a sitting position elevated off the floor with knees together and one end of the exerciser resting on their thighs, and the other end gripped in their hands close to the chest. The exercise is to compress the exerciser using either the arms alone or the upper torso alone.

2. Same as above except this time the user compresses the exerciser with open palms and with the length of the hands parallel to the chest ,with palms facing downwards.

3. Again the user is sitting on an elevated platform with one leg bent at the knee and the corresponding foot slightly raised off the ground. The exerciser is held in a vertical position by the hands and the exercise is to compress the exerciser while keeping it vertical.

4. The user is lying on the ground with their legs together and arched vertically. The exerciser is held at one end in the hands close to the chest and the other end is resting against their thighs. The exercise is to compress the exerciser by raising the legs towards the arms while

keeping the arms still.

5. The user is lying on the ground in a similar position to above except that the feet are flat on the floor. The exerciser is in a similar position too. The exercise is in compressing the exerciser by raising the upper body and keeping the arms and legs still.

6. The user is sitting upright on the floor with one leg bent slightly in the vertical plane. The exerciser is positioned with one end flat on the floor and the other end is rotated so that it fits in the bend of the knee. The exerciser is positioned so that it is perpendicular to the legs when viewed from above. The exercise is to compress the exerciser by rotating the bent leg towards the floor without moving the feet or the body.

7. The user is sitting on and elevated platform and has one leg on the floor and the other leg raised so that the foot is approximately at the same level as the hip. One end of the exerciser is resting against the heel of the raised foot and the other end is held against the underside of the thigh of the same leg such that the exerciser is parallel to the floor. The exercise is in compressing the exerciser by moving the raised foot towards the user while keeping the exerciser parallel to the floor.

8. The user is sitting upright on the floor with their legs together and flat on ground. The user's feet point upwards. The exerciser is held at one end

in the hands with straight arms. The other end is resting against the slope of the feet just under the toes. The exercise is in compressing the exerciser by moving the upper body towards the fee while keeping the arms straight.

9. The user is sitting upright in the same configuration as above. The exerciser is resting at one end on the floor, and at the other end it is resting against the sole of the feet, by the toe area. The exerciser is pointing in the same direction as the legs, and is held at an acute angle to the floor, and the exercise is in compressing the exerciser by pointing the toes away from the body.

10. Same position as above, but this time with the knees bent.

11. Again the user is sitting upright on the floor with one leg straight and slightly raised. The exerciser is positioned between the raised foot and the floor in a vertical direction with one handling member under the heel of the foot, and the other end resting on the floor. The exercise is to compress the exerciser by lowering the raised leg to the floor.

12. The user has the exerciser held perpendicular to their body, one end of the exerciser resting at their waist and pointing to one side in a direction along the line joining the shoulders. The hand on the side with the exerciser grips the other end of the exerciser and when viewed from

above the arm is in line with the exerciser. The exercise is in compressing the exerciser by bringing the arm towards the body.

It is to be noted that these exercises are in addition to the ones that are commonly achievable from exercisers available at the time of writing which can also be done with this invention, such as exercises done by compressing the exerciser between the hands, between the arms, between one hand and one shoulder, between the hands with arms held behind the back and between the knees. With the addition of the second rod-like element to extend the overall length of the exerciser, the exercises mentioned above can be repeated at a greater distance from the body, thereby providing an additional set of exercises and toning the body even more completely.

Embodiments of the invention will now be described by way of example and with reference to the accompanying drawings wherein:

Figure 1 is an isometric view of the exerciser according to an example of the invention;

Figure 2 is an isometric view of the exerciser of Figure 1 with an extension bar;

Figure 3 is a sectional view along the major axis of the exerciser of Figure 2; and

Figure 4 is an isometric view of the exerciser according to an alternative example of the invention.

Figures 1 to 3 show a first embodiment of the invention. The elongate body 1 comprises a housing 2 which houses a spring 14 and two end caps 3 and 4. Housing 2 is a hollow stainless steel cylinder of approximately 32 mm diameter with a wall thickness of approximately 1.5 mm. End caps 3 and 4 are made of a suitable plastic and are shaped in a partial hemispherical shape. The diameter of the end caps is the same as the diameter of the cylindrical tube 2. One of the end caps 4 includes a threaded stub 21 for attaching a handle 7. As shown in Figure 1 the handle 7 may be screwed directly on the stub 21. Alternatively, as shown in Figures 2 and 3, an extension bar 8 can be screwed onto the stub 21 and the handle 7 screwed on the opposite end of the extension bar 8. The screw threads on the stub 21 and extension bar 8 are the same to allow the handle 7 to be used with or without the extension bar 8. There is a hole 22 through extension bar 8 near the end proximal to the elongate body 1. A post may be inserted through hole 22 to facilitate the removal of extension bar 8 from handle 7 or from the elongate body 1.

The other end cap 3 includes an opening into which a bar 5 connected to the handle 6 by a screw thread is received. The end of the bar 5 received in the elongate body 2 abuts against the end of the spring 14 via a plunger 15. A sheet of PTFE 23 is rolled up and inserted into the elongate body 2. Sheet 23 forms a lining against which spring 14 and plunger 15 contacts as the resistive

mechanism is operated. The low friction of sheet 23 reduces wear on the resistive mechanism and provides a smoother action for the user. The opening in the end cap 3 has a rim of slightly reduced diameter. The end of the bar 5 includes a spring loaded ball which partially protrudes from the side of the bar 5. When the bar 5 is inserted into the opening, the ball is moved, against the action of the spring, into the bar 5, allowing the end to pass into the opening. After passing the rim, the ball is moved outwardly under the action of the spring. In this position, when an attempt is made to pull the bar 5 from the opening, the ball abuts the rim of the opening to prevent this, unless sufficient force is used to overcome the biasing force on the ball.

The handles 6 and 7 are identical and consist of a metal bar of approximately 170 mm length and 23 mm diameter which is coated with a high friction rubberised coating. Bar 5 is approximately 160 mm long and 10 mm in diameter made of stainless steel. The threaded post at the end of 5 which is received into 6 is approximately 11 mm in length ending at one end of 5. The threaded post on 4 is of the same dimensions.

In this embodiment handles 6 and 7 are freely rotatable with respect to each other. Bar 5 can freely rotate within 2 and thus handle 6 when attached to 5 can freely rotate also. Handle 7 is held at a fixed angle with respect to 2 either by direct attachment onto 2 or by attachment onto 8.

A flange 20 is provided between the end cap 4 and rod-like element 8. The

flange 20 is made of a similar material to end cap 4, or any other plastic which has a suitably stiff characteristic. Flange 20 is shaped like a hemispherical shell with a thickness of approximately 1.5 mm and of a diameter of approximately 35 to 40 mm. Aperture 21 in flange 20 is sized to accommodate the threaded post of end cap 4. Flange 20 is held in place between the rod-like element 8 and the end of end cap 4. The flange 20 may be removed if not required for a particular set of exercises.

In use, a user holds the two handles, for example one in each hand, and pushes the handles towards each other. The rod 5 attached to the handle 6 is pushed into the elongate body 2, compressing the spring 14. The spring 14 provides a resistive force against this. The handles can be compressed between other body parts, for example between the knees. Where the flange 20 is provided, the user can hold the flange 20 and push the other handle 7 towards the body 2.

Fig. 4 shows an embodiment where there are means for varying the resistive force felt by the user. End cap 16 can be rotated about an axis parallel to the major axis of the elongate body 1, and can take the place of either end cap 3 or end cap 4. In this depiction it is replacing 3. It is envisaged in this embodiment that end cap 16 is made from a similar material as end caps 3 or 4 and has similar dimensions. Ridges 17 are moulded. Here they are shown as being in a longitudinal direction along the major axis of the elongate body 1, and arranged circumferentially around 16. Ridges 17 are approximately 0.8 mm

high and 10 mm in length. Also shown are marking means 18 which are preferably employed on both 16 and the cylinder 2 so that the user can determine at what level the resistance is set. An electronic counter 19 is positioned on the surface of cylinder 2 and records the number of repetitions the user has achieved and also records other variables which can be set by the user. In this embodiment 19 can record the user's pulse rate through suitable electrode terminals, and also warn the user when a set level has been achieved. Clock and timer functions are also available.

In an alternative example, the exerciser is made primarily from a plastics material. This is less expensive and lighter than a metal version. In this case, snap fittings are used to connect the components rather than screw fittings.

The invention has been described in detail herein by way of example only, and many variations are possible without departing from the spirit and scope of the invention. Particularly, it should be appreciated that features described with reference to one embodiment may be used in others.